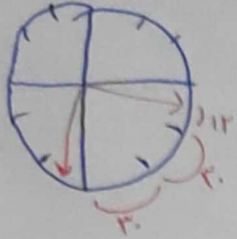


$$120 + 9 + 27 = 156$$

الف (۱)

$$L = |s/d - r \cdot h| \rightarrow |s/d (a^2) - r \cdot (r)| = 2.7$$

$$240 - 2.7 = 153$$



$$70 + 12 + 9 = 91$$

الف (۲)

$$\alpha |s/dm - r \cdot h| \rightarrow |s/d (18) - r \cdot (4)| = 11$$

$$S = \frac{\alpha R^2}{2} = \frac{\pi}{4} \times \frac{r^2}{4} = \frac{\pi r^2}{16}$$

الف (۳)

$$L = \alpha R \rightarrow \frac{\pi}{4} \times r = \frac{\pi}{4} \quad \frac{L}{R} = \frac{R}{r} + 7$$

الف (۴)

$$S = \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = 10.73$$

الف (۵)

$$a^2 = b^2 + c^2 - 2bc \cos A \Rightarrow a^2 = 4^2 + 2^2 - 10 \times \frac{1}{2} = 49$$

الف (۶)

$$a^2 = 49 \Rightarrow a = 7 \quad \text{also } 1 + 2 + 7 = 10$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} \Rightarrow \frac{10}{\frac{1}{2}} = \frac{10\sqrt{2}}{\sin B} \Rightarrow \sin B = \frac{\sqrt{2}}{2} \Rightarrow \sin B = \frac{1}{\sqrt{2}} \Rightarrow B = 45^\circ$$

الف (۷)

$$\Rightarrow C = 180 - 70 - 40 = 70^\circ \quad \frac{10\sqrt{2}}{10} = \frac{r \sin 70^\circ}{\sin 70^\circ} \Rightarrow \frac{r \sin 70^\circ}{\sin 70^\circ} = r \sin 70^\circ$$

B = 45°

$$\frac{\tan(\pi a) + r \tan(\pi + a)}{\tan(r\pi - a) - \tan(r\pi + a)} = \frac{\tan a + r \tan a}{-\tan a - \tan a} = \frac{r \tan a}{-r \tan a} = -1$$

$$\text{الف) } \cos^r(\pi, \delta) = \frac{1 + \cos \epsilon \delta}{r} = \cos(r\pi, \delta) = \sqrt{\frac{1 + \sqrt{\frac{r}{r}}}{r}}$$

$$\text{ب) } \sin^r(\pi, \delta) = \frac{1 - \cos(r\pi, \delta)}{r} = \sin(r\pi, \delta) = \sqrt{\frac{1 + \sqrt{\frac{r}{r}}}{r}}$$

$$\frac{\sin^r \alpha + \cos^r \alpha + r \sin \alpha \cos \alpha + \sin^r \alpha + \cos^r \alpha - r \sin \alpha \cos \alpha}{\sin^r \alpha - \cos^r \alpha} = r$$

$$r \sin^r \alpha - r \cos^r \alpha = r \rightarrow r(1 - \cos^r \alpha) - r \cos^r \alpha = r \rightarrow 4 \cos^r \alpha = 1, \cos^r \alpha = \frac{1}{4}$$

$$1 + \tan^r \alpha = \frac{1}{\frac{1}{4}} \Rightarrow \tan^r \alpha = \frac{3}{4}$$

$$\frac{\sin^r \alpha - r \cos^r \alpha + 1}{\cos^r \alpha} = f \rightarrow \frac{\sin^r \alpha - r(1 - \sin^r \alpha) + 1}{\cos^r \alpha} = f$$

$$\frac{r \sin^r \alpha - 1}{\cos^r \alpha} = f \rightarrow f \cos^r \alpha = r \sin^r \alpha - 1 \xrightarrow{\div \cos^r \alpha} f = r \tan^r \alpha - \frac{1}{\cos^r \alpha}$$

$$r \tan^r \alpha - 1 - \tan^r \alpha = f \Rightarrow \tan^r \alpha = \frac{f+1}{r}$$

$$\frac{r \cot 1\omega - \cot 1\omega}{-r \tan 1\omega - \cot 1\omega} = \frac{\frac{1}{a}}{-a - \frac{1}{a}} = \frac{-1}{ra^2 + 1}$$